

**SUBJ: OBSTACLE ASSESSMENT SURFACE EVALUATION FOR INDEPENDENT  
SIMULTANEOUS PARALLEL PRECISION OPERATIONS**

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**1. PURPOSE.** This order prescribes obstacle assessment surfaces to evaluate the obstacle environment for an air traffic-directed early turnout of aircraft conducting independent simultaneous parallel approaches. The guidance prescribed in this order identifies obstacles that must be considered for an aircraft directed by Air Traffic Control (ATC) to discontinue an Instrument Landing System (ILS) or Microwave Landing System (MLS) approach or missed approach and turn away from the approach course.

**2. DISTRIBUTION.** This order is distributed to all addressee on special distribution lists ZVN-826, ZVS-827 and ZAT-423.

**3. BACKGROUND.** One of the major aviation issues is the steady increase in the number and duration of flight delays. Airports have not been able to expand to keep pace with traffic growth. The Federal Aviation Administration (FAA) has taken a variety of measures to increase airport capacity. These include revisions to air traffic control procedures; addition of landing systems, taxiways and runways; and application of new technology. The Precision Radar Monitor (PRM) program is one of these new initiatives. PRM is an advanced radar monitoring system intended to increase utilization of multiple, closely-spaced parallel runways in Instrument Meteorological Conditions (IMC) weather by use of high resolution displays with alert algorithms and higher aircraft position update rate. Monitor controllers are required for both standard and closely-spaced runway separations. The primary purpose of radar monitoring during simultaneous, independent approach operations is to ensure safe separation of aircraft on the parallel approach courses. This separation may be compromised if an aircraft blunders off course toward an aircraft on the adjacent approach. For close parallel operations (3,400 feet but less than 4,300 feet) and for standard parallel operations (4,300 feet and above), the radar monitoring allows controllers to direct either aircraft off the approach course to avoid a possible collision. Resolution of a blunder is a sequence of events: the monitor alerts and displays the blunder, the controllers intervene, and the pilots comply with controller instructions; thus, increasing the operational safety, flyability, and airport capacity.

**4. DEFINITIONS.**

**a. Course Width (CW).** The angular deviation required to produce a full scale ( $\pm$ ) course deviation indication of the airborne navigation instrument. This width is normally tailored in accordance with runway length to a full course sector width not greater than  $6^\circ$  ( $\pm 3^\circ$ ), and a linear sector width of 700 feet ( $\pm 350$  feet each side of centerline) AT THRESHOLD for precision runways longer than 4,000 feet. Few

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**Distribution:** ZVN-826; ZVS-827; ZAT-423; AVN-100(150Cys); AEU-1(10Cys);  
AOS-200( 10Cys); AMA-200(80Cys)

**Initiated By:** AFS-421

**b. Parallel Approach Obstruction Assessment (PAOA).** An examination of specified surfaces, in addition to the ILS TERPS surfaces, in the direction away from the NTZ and adjacent parallel ILS runway, into which an aircraft on an early ILS breakout could fly.

**c. Parallel Approach Obstruction Assessment Surfaces (PAOAS).** Surfaces examined during the PAOA for obstacle penetration and depicted in appendix 1, figures 2 through 5.

**d. Parallel Approach Obstruction Assessment Surface Penetration.** One or more obstacles that penetrate the PAOAS.

**e. Parallel Approach Obstruction Assessment Controlling Obstruction (PAOACO).** The obstruction within the boundaries of the PAOAS which constitutes the maximum penetration of that surface.

**f. No Transgression Zone (NTZ).** See Orders 8260.3B, paragraph 997, and 8260.39.

**g. Normal Operational Zone (NOZ).** See Orders 8260.3B, paragraph 997, and 8260.39.

**5. RELATED PUBLICATIONS.** These criteria and procedures prescribed in this order are closely related to criteria contained in other publications as follows:

**a.** Order 6750.7, Category II ILS Program.

**b.** Order 6750.16B, Siting Criteria for Instrument Landing Systems (ILS).

**c.** Order 6830.5, Criteria for Siting Microwave Landing Systems.

**d.** Order 8240.47A, Determination of Instrument Landing System (ILS) Glidepath Angle, Reference Datum Heights (RDH), and Ground Point of Intercept (GPI).

**e.** Order 8260.3B, United States Standard for Terminal Instrument Procedures (TERPS).

**f.** Order 8260.34, Glide Slope Threshold Crossing Height Requirements.

**g.** Order 8260.36, Civil Utilization of Microwave Landing System (MLS).

**h.** Order 8260.39, Close Parallel ILS/MLS Approaches.

**i.** AC 120-29, Criteria for Approving Category I and Category II Landing Minima for FAR 121 Operators.

**a. Parallel Runway Simultaneous ILS Approaches.** The procedures for airports with multiple parallel runways must ensure that an aircraft approach on one runway is safely separated from those approaching the adjacent parallel runway. An example of such procedures is depicted in appendix 1, figure 1. Aircraft are directed to the two intermediate segments at altitudes which differ by at least 1,000 feet. Vertical separation is required when lateral separation becomes less than 3 nautical miles (NM), as aircraft fly to intercept and stabilize on their respective localizers (LOC). This 1,000-foot vertical separation is maintained until aircraft begin descent on the glideslope.

**b.** When lateral radar separation is less than the 3 NM and the 1,000-foot altitude buffer is lost, the aircraft must be monitored on radar. The controllers, on separate and discrete frequencies, will observe the parallel approaches, and if an aircraft blunders from the Normal Operating Zone (NOZ) into a 2,000-foot No Transgression Zone (NTZ), the monitor controller can intervene so that threatened aircraft on the adjacent approach are turned away in time to prevent a possible encounter. This maneuver, on the part of the threatened aircraft, is termed a "breakout" because the aircraft is directed out of the approach stream to avoid the transgressor aircraft. A controller for each runway is necessary so that one can turn the transgressing aircraft back to its course centerline while the other directs the breakout. See appendix 1, figure 1.

**c.** The 2,000-foot NTZ, flanked by two equal NOZ's, provides strong guidance to the monitor controller and maneuvering room for the aircraft to recover before entering the adjoining NOZ. Aircraft are required to operate on or near the approach course within the limits of the NOZ. If an aircraft strays into the NTZ or turns to a heading that will take it into the NTZ, it is deemed a threat to an aircraft on the adjacent course and appropriate corrective action or breakout instructions are issued.

**7. CRITERIA.** The PAOA evaluation shall be conducted to identify penetrating obstacles as part of a coordinated assessment for all independent simultaneous approach operations to parallel ILS/MLS runways. In these criteria, ILS glideslope/localizer terms are synonymous to and may be used interchangeably with MLS elevation glidepath/azimuth (GP/AZ) terms. The surface dimensions for the obstacle assessment evaluation are defined as follows:

**a. Surface 1.** A final approach course descent surface which is coincident with the GS/GP beginning at runway threshold with the width point abeam the threshold 350 feet from runway centerline opposite the NTZ, with lateral boundaries at the outer edge of the LOC/AZ CW, and ending at the farthest GS/GP intercept. See appendix 1, figure 2.

**(1) Length and Height.** Surface 1 begins over the runway threshold at a height equal to the threshold crossing height (TCH) for the runway, and continues outward and upward at a slope that is coincident with the GS/GP, to its ending at the GS/GP intercept point. See appendix 1, figure 2.

or;

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(b)  $1/2 \text{ CW} = \text{Distance from LOC ANTENNA, in feet, along CL X TANGENT of } 1/2 \text{ CW beam angle; e.g., } 1/2 \text{ CW} = \text{ANT Distance X TAN } 1/2 \text{ CW angle. See appendix 1, figure 2.}$

**b. PAOAS, Surface 2.** A surface having a common boundary with the outer edge of surface 1 on the side opposite the NTZ, and slopes upward and outward from the edge of the descent surface 1 at a slope of 11:1, measured perpendicular to the LOC/AZ extended course centerline. Further application is not required when the 11:1 surface reaches a height of 1,000 feet below the Minimum Vector Altitude (MVA), Minimum Sector Altitude (MSA), or Minimum Obstacle Clearance Altitude (MOCA), whichever is lowest. See appendix 1, figure 3.

**c. PAOAS, Surface 3.** For ILS/MLS CATEGORY I, surface 3 begins at the point where surface 1 reaches a height of 200 feet above the runway Touch Down Zone Elevation (TDZE). At this point, surface 3 begins at a height of 100 feet above TDZE (100 feet lower than surface 1). From this point of beginning, the edge of surface 3 area splays at a  $15^\circ$  angle from a line parallel to the runway and rises longitudinally at a 40:1 slope along the  $15^\circ$  splay line CD while continuing laterally outward and upward at an 11:1 slope (line CE is perpendicular to the  $15^\circ$  splay line CD). Further application is not required when the 40:1 and 11:1 slopes reach a height of 1,000 feet below the MVA, MSA, or MOCA, whichever is lowest. See appendix 1, figure 4.

**d. PAOAS, Surface 4.** In lieu of surface 3, for ILS/MLS CATEGORY II approaches, surface 4 begins at the point where surface 1 reaches a height of 100 feet above the runway TDZE. At this point, surface 4 begins at the elevation of the runway (100 feet lower than surface 1). From this point of beginning, the edge of surface 4 area splays at a  $15^\circ$  angle from a line parallel to the runway and rises longitudinally at a 40:1 slope along the  $15^\circ$  splay line CD, while continuing laterally outward and upward at an 11:1 slope (line CE is perpendicular to the  $15^\circ$  splay line CD). Further application is not required when the 40:1 and 11:1 slopes reach a height of 1,000 feet below the MVA, MSA, or MOCA, whichever is lowest. See appendix 1, figure 5.

**e.** Establish a latitude-longitude list for all obstacles penetrating PAOA surfaces 2, 3, and 4. Identify locations of surface penetration within the surface areas. See appendix 1, figures 3, 4, and 5.

**f.** Surface 1 height, at any given centerline distance, may be determined in respect to threshold elevation, by adding the TCH to the product of centerline distance in feet from threshold times the tangent of the GS/GP angle.

measured perpendicular from the centerline of the runway. Beginning height of surface 3, point C, is 100 feet above the TDZE. Beginning height of surface 4, point C, is the TDZ elevation. Points D and E represent the ending of the surfaces 1,000 feet below MVA, MSA, or MOCA, whichever is lowest. See appendix 1, figures 4 and 5.

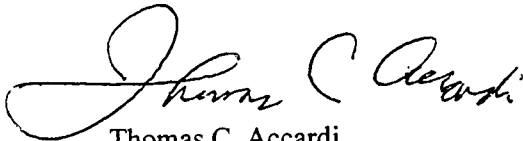
**8. PARALLEL OPERATIONS APPLICATION REQUIREMENTS.** PAOA obstacle penetrations shall be identified and, through coordinated actions of those affected, considered for electronic mapping on controller radar displays. If possible, penetrations should be removed by facilities considering independent simultaneous approach operations to parallel precision runways. Where obstacle removal is not feasible, air traffic operational rules shall be established to avoid obstacles. If a significant number of penetrations occur, a risk assessment study shall be required to provide guidance as to whether independent simultaneous ILS/MLS operations to parallel runways should be approved or denied.

**9. INFORMATION UPDATE.** Any deficiencies found, clarification needed, or suggested improvements regarding the content of this order, shall be forwarded for consideration to:

DOT/FAA  
ATTN: Standards Development Branch, AFS-421  
P. O. Box 25082  
Oklahoma City, OK 73125

**a. Your Assistance is Welcome.** FAA Form 1320-19, Directive Feedback Information, is included with this order for your convenience. If an interpretation is needed immediately, you may call the originating office for guidance. However, you should also use the FAA Form 1320-19 as a followup to the verbal conversation.

**b.** Use the "Other Comments" block of this form to provide a complete explanation of why the suggested change is necessary.



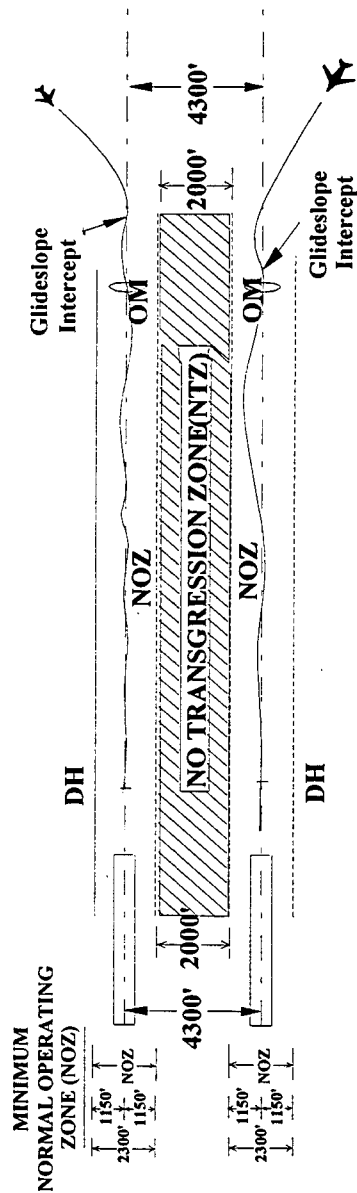
Thomas C. Accardi  
Director, Flight Standards Service



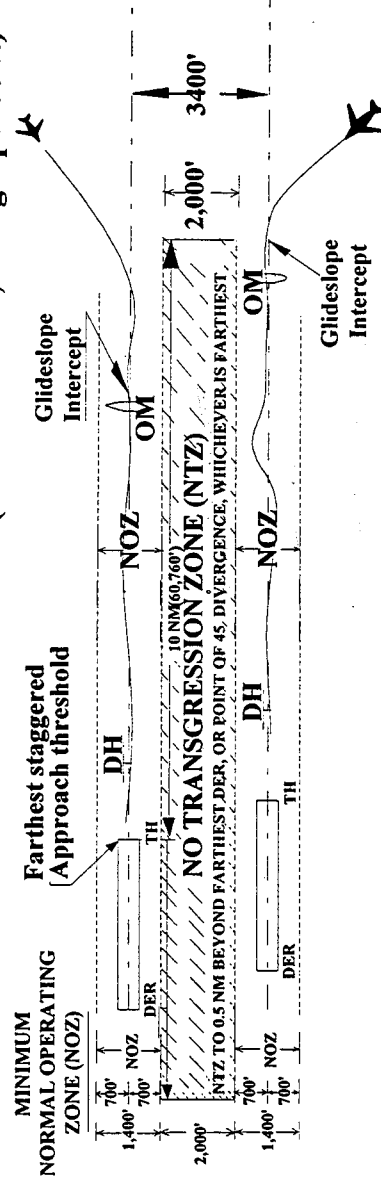
1B.	Close Parallel Independent Simultaneous ILS Approaches No Transgression Zone (NTZ) and Normal Operating Zone (NOZ). (Order 8260.39.)	1
2.	Final Approach Descent Surface 1.	2
3.	Parallel Approach Obstacle Assessment Surface 2.	3
4.	CAT I Missed Approach Early Breakout Parallel Approach Obstacle Assessment Surface 3.	4
5.	CAT II Missed Approach Early Breakout Parallel Approach Obstacle Assessment Surface 4.	5



**Figure 1. INDEPENDENT SIMULTANEOUS PRECISION PARALLEL  
RUNWAY APPROACH ZONES.**

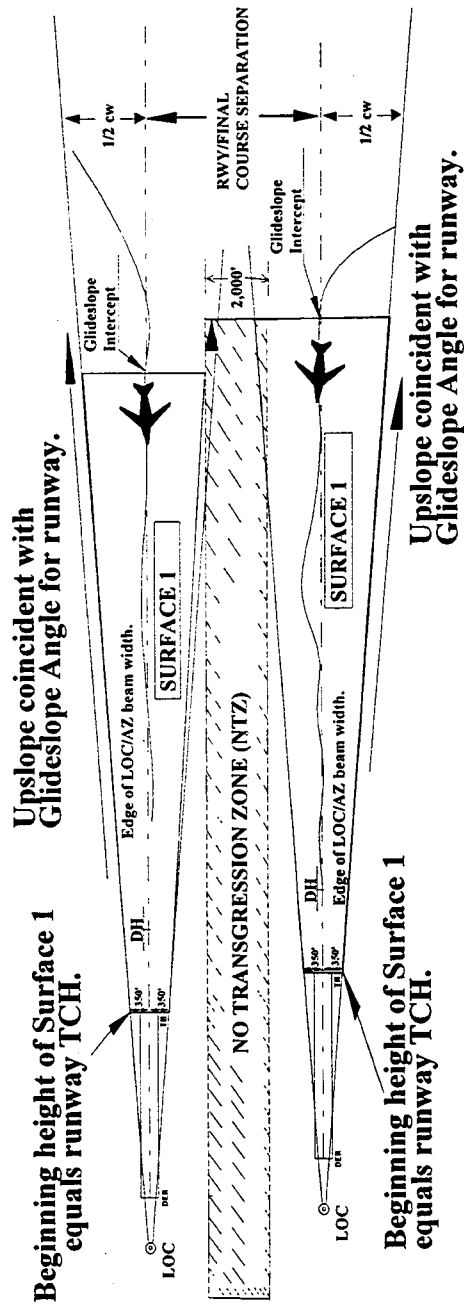


**Figure 1A. INDEPENDENT SIMULTANEOUS ILS NO TRANSGRESSION ZONE  
AND NORMAL OPERATING ZONE. (Order 8260.3B, Paragraph 997.)**



**Figure 1B. CLOSE PARALLEL INDEPENDENT SIMULTANEOUS ILS APPROACH  
NO TRANSGRESSION ZONE (NTZ) AND NORMAL OPERATING ZONE  
(Order 8260.39.)**

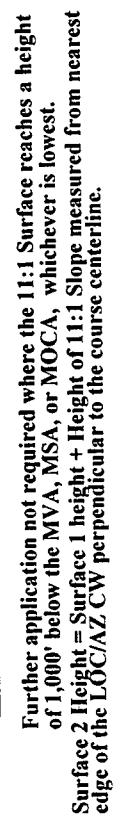
Figure 2. FINAL APPROACH DESCENT SURFACE 1.



- $\frac{1}{2} CW =$  Perpendicular distance from runway/extended  $c_L$  to edge of course beam width.
- $\frac{1}{2} CW =$  Distance from Threshold in feet along  $c_L \times \tan \left( \frac{1}{2} \text{ Course Beam Angle} \right) + 350'$
- OR
- $\frac{1}{2} CW =$  Distance from LOC/AZ Antenna in feet along  $c_L \times \tan \left( \frac{\text{LOC/AZ Beam Angle}}{2} \right)$

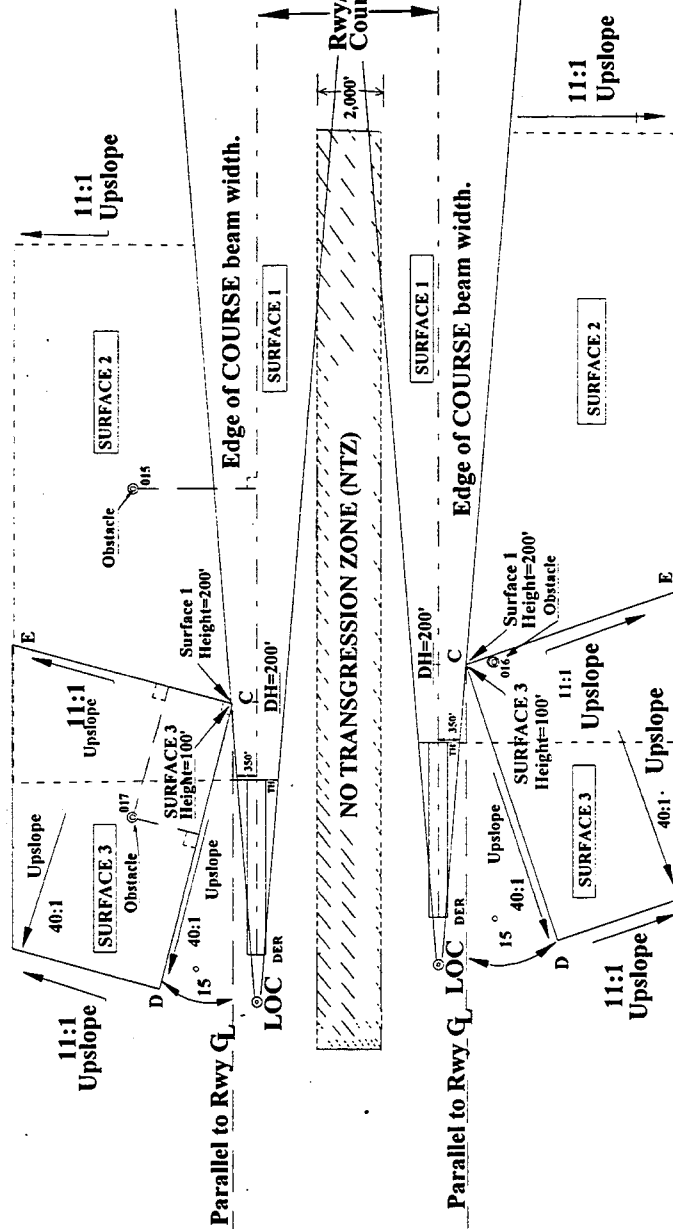
$$\text{Surface 1 Height} = \text{Distance from TH in feet along } c_L \times \tan \text{ of the GS/GP angle} + \text{TCH.}$$

**Further application not required where the 11:1 Surface reaches a height of 1,000' below the MVA, MSA, or MOCA, whichever is lowest. The outer edge of Surface 2 may not typically be parallel to final course centerline.**



**Figure 4. CAT I MISSED APPROACH EARLY BREAKOUT  
PARALLEL APPROACH OBSTACLE ASSESSMENT SURFACE 3.**

The outer edges of Surfaces 2 or 3 may not typically be parallel to each other or runway  $C_L$ .  
Further application not required when the 40:1 and 11:1 surfaces  
reach a height of 1,000' below MVA, MSA, OR MOCA, whichever is lower.



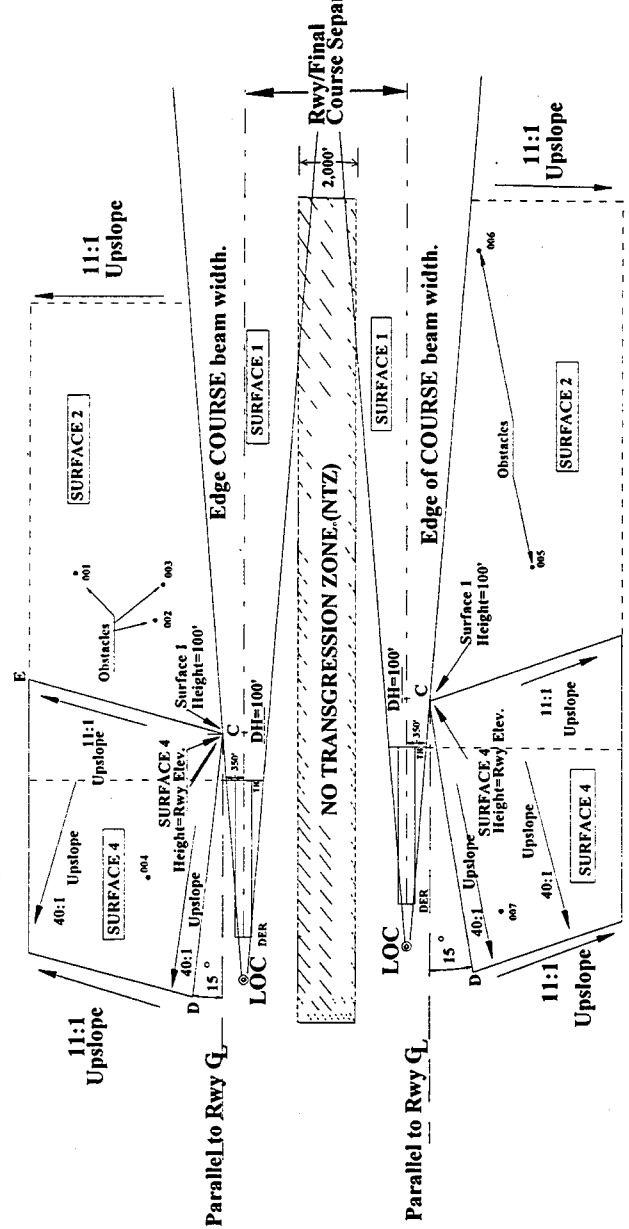
Further application not required when the 40:1 and 11:1 surfaces

reach a height of 1,000' below MVA, MSA, OR MOCA, whichever is lower.

Surface 3 Height = Height of 11:1 Slope measured (fr. Obs.) perpendicular to Line CD + Height of 40:1 Slope measured (fr. Obs.) perpendicular to Line CE + 100 feet.

**Figure 5. CAT II MISSED APPROACH EARLY BREAKOUT  
PARALLEL APPROACH OBSTACLE ASSESSMENT SURFACE 4**

The outer edges of Surface 2 or 4 may not typically be parallel to each other or runway CL. Further application not required when the 40:1 and 11:1 surfaces reach a height of 1,000' below MVA, MSA, OR MOCA, whichever is lower.



**Further application not required when the 40:1 and 11:1 surfaces reach a height of 1,000' below MVA, MSA, OR MOCA, whichever**

**Surface 4 Height = Height of 11:1 Slope measured (fr. Obs.) perpendicular to Line CD + Height of 40:1 Slope measured (fr. Obs.) perpendicular to Line CE.**



Please submit any written comments or recommendations for improving this directive, or suggest new items or subjects to be added to it. Also, if you find an error, please tell us about it.

Subject: Order \_\_\_\_\_

To: Directive Management Officer, \_\_\_\_\_

*(Please check all appropriate line items)*

☐ An error (procedural or typographical) has been noted in paragraph \_\_\_\_\_ on page \_\_\_\_\_.

☐ Recommend paragraph \_\_\_\_\_ on page \_\_\_\_\_ be changed as follows:  
*(attach separate sheet if necessary)*

☐ In a future change to this directive, please include coverage on the following subject  
*(briefly describe what you want added):*

☐ Other comments:

☐ I would like to discuss the above. Please contact me.

Submitted by: \_\_\_\_\_ Date: \_\_\_\_\_

FTS Telephone Number: \_\_\_\_\_ Routing Symbol: \_\_\_\_\_





